The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 29

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte FRANCIS J. MAGUIRE, JR.

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Appeal No. 1999-1344
Application No. 08/364,718

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ON BRIEF

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Before FLEMING, HAIRSTON and GROSS, ***Administrative Patent Judges***.

FLEMING, ***Administrative Patent Judge***.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1-8, all the claims pending in the application.

The instant invention discloses an eye tracking method and apparatus that provides a new way to monitor the eye with respect to more than one coordinate system. An eye attitude monitor is combined with a head translatory position monitor in order to relate the eye translatory position as well as its attitude to an arbitrarily selected reference coordinate system. Appellant's specification ("Specification"), page 3. The term "attitude" means the angular rotations of an eye visual axis with respect to arbitrarily selected axes of an eye coordinate system. Specification, page 6. Eye attitude can mean up to three axes of rotation (pitch, roll, yaw) about an origin of an eye coordinate system. Specification, page 4. A head attitude monitor is added to relate the attitude of the eye to the arbitrarily selected reference coordinate system. Specification, page 7. The eye tracking apparatus tracks the attitude of one or both eyes with respect to a head attached to a body. Specification, page 4. The origin of the eye

coordinate system is fixed in relation to the origin of a head coordinate system. Specification, page 2. The attitude of the head is monitored with respect to a selected first coordinate system such as the body. Specification, page 6, line 32, to page 7, line 1. The monitors provide sensed signals to a computer. Specification, page 7. The computer inputs the signals to perform eye-head coordinate transformations and provides a tracking or visual axis signal to a control device. Specification, page 8. The control device produces a signal that may be used for many purposes including positioning an image artifact and target acquisition for controlling a projectile. Specification, page 8.

Appellant's independent claim 1, reproduced below, is representative of the invention:

1. Apparatus, comprising:

an eye monitor, responsive to an eye direction, for providing an eye direction signal with respect to an associated head coordinate system;

a head translatory position monitor, responsive to a translatory position associated with a head translating with respect to a reference coordinate system, for providing a head translatory position signal;

a signal processor, responsive to the eye direction signal and the head translatory position signal, for providing

the eye direction signal referenced to the reference coordinate system with respect to both head translatory position and eye direction; and

a control, responsive to the eye direction signal referenced to the reference coordinate signal, for providing a control signal.

In rejecting Appellant's claims, the Examiner relies on two references:

Lewis	4,028,725	Jun. 7, 1977
Beckman	5,383,990	Feb. 14, 1995 (filed Apr. 23, 1993)

Claims 1-8 stand rejected under 35 U.S.C. § 103 as obvious over Lewis and Beckman. Rather than repeat the arguments of Appellant and Examiner, we refer the reader to the Appellant's Briefs[1] and Examiner's Answer[2] for the respective details thereof.

OPINION

With full consideration being given the subject matter on appeal, the Examiner's rejection and the arguments of

[1] Appellant filed an Appeal Brief ("Brief") on April 30, 1998. In response to the Examiner's Answer, Appellant filed a Reply Brief on August 27, 1998.

[2] The Examiner, in response to Appellant's Brief, filed an Examiner's Answer on June 24, 1998.

Appellant and Examiner, for the reasons stated infra, we will reverse the Examiner's rejection of claims 1-8 under 35 U.S.C. § 103 as obvious over Lewis and Beckman.

In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of establishing a ***prima facie*** case of obviousness. ***In re Oetiker***, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). ***See also In re Piasecki***, 745 F.2d 1468, 1471-72, 223 USPQ 785, 788 (Fed Cir. 1984)). The Examiner can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. ***In re Fine***, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598. Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the Appellant. ***See Oetiker***, 977 F.2d at 1445, 24 USPQ2d *at 1444.* ***See also Piasecki***, 745 F.2d at 1472, 223 USPQ at 788 ("After a ***prima facie*** case of obviousness has been established, the burden of going forward shifts to the applicant."). If the examiner fails to establish a ***prima facie*** case, the rejection

is improper and accordingly merits reversal. ***In re Fine***, 837 F.2d at 1074, 5 USPQ2d at 1598.

An obviousness analysis commences with a review and consideration of all the pertinent evidence and arguments. **See** ***Oetiker***, 977 F.2d at 1445, 24 USPQ2d at 1444 ("In reviewing the examiner's decision on appeal, the Board must necessarily weigh all of the evidence and argument."). Accordingly, we now consider the claims on appeal.

In traversing the Examiner's rejection of the claims, the Appellant first argues that Beckman only discloses the monitoring of head attitude and actually teaches the suppression of the translatory position information from a head sensor. Brief at page 6. Next, Appellant asserts that there is no motivation to use sensed head translations with eye monitoring to be found in Lewis or Beckman either alone or in combination. Appellant argues that "[t]he speculations of the Examiner with regard to providing greater accuracy and enhanced control by using head translations do not come from Lewis or Beckman but from the Examiner." Brief at page 6. Additionally, Appellant asserts that Beckman and Lewis teach

sensing head attitude, not head position. Brief at page 9. Finally, Appellant asserts that neither Lewis nor Beckman enables the signal processing carried out by the claimed signal processor. Brief at page 9.

The Examiner maintains that Lewis teaches an eye monitor, position monitor, signal processor and control. Examiner's Answer at page 3. However, the Examiner looks to the Beckman reference for the teaching of head translational movement and asserts that it would have been obvious to one having ordinary skill in the art to utilize the Beckman method for sensing both the translational and angular movements of the traveler's head in the monitoring system taught by Lewis to provide an accurate virtual image of a scene surrounding a vehicle because a virtual reality control system would sense the position and orientation of the traveler's head and adjust the projection parameters to maintain the illusion that the traveler is immersed in a real scene. Examiner's Answer at page 4.

We find that Lewis enables a means of coordinating the movement or control of a remote sensor with the movement of the remote observer's head or eyes. See Lewis, column 1,

lines 23-26. Lewis teaches a high resolution vision system in which remotely located sensors controlled by head and eye tracking means generate signals that are transmitted to signal processing means on the helmet to produce a display image having a wide field of view that is maintained on the operator's line of sight. See Lewis, column 1, lines 10-13. Beckman teaches a virtual reality flight control system having six degrees of freedom of acceleration or velocity control. Beckman, column 4, lines 30-35.

However, we find no objective teaching in either Lewis or Beckman that would lead one of ordinary skill in the art to combine the references. Lewis relates to the sensing of images outside an actual aircraft and addresses the problem of remotely sensing and displaying images within a pilot's focus. Consequently, Lewis' reference system merely involves the pilot's line-of-sight (LOS). Beckman involves a virtual reality flight control system and addresses the problem of flight simulation in outer space. Therefore, Beckman uses six degrees of freedom in a more complicated reference coordinate system that permits greater combinations of translations and rotations. Beckman and Lewis are directed to disparate

teachings which address different problems and we find no reason or suggestion in either prior art reference to enable their combination in this obviousness analysis. We conclude therefore that the Examiner has failed to establish a ***prima facie*** case of obviousness.

When an obviousness determination is based on multiple prior art references, there must be a showing of some "teaching, suggestion, or reason" to combine the references. ***Winner Int'l Royalty Corp. v. Wang***, 202 F.3d 1340, 1348, 53 USPQ2d 1580, 1586 (Fed. Cir.) cert. denied, 530 U.S. 1238 (2000). The Federal Circuit further instructs that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." ***In re Fritch***, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), ***citing In re Gordon***, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). It is further established that "such a suggestion may come from the nature of the problem to be solved, leading inventors to look to references relating to possible solutions

to that problem." ***Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.,*** 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996), ***citing In re Rinehart***, 531 F.2d 1048, 1054, 189 USPQ 143, 149 (CCPA 1976) (considering the problem to be solved in a determination of obviousness). The Federal Circuit reasons in ***Para-Ordnance Mfg. Inc. v. SGS Importers Int'l Inc.***, 73 F.3d 1085, 1088-89, 37 USPQ2d 1237, 1239-40 (Fed. Cir. 1995), ***cert. denied***, 519 U.S. 822 (1996) that for the determination of obviousness, the court must answer whether one of ordinary skill in the art who sets out to solve the problem and who had before him in his workshop the prior art, would have been reasonably expected to use the solution that is claimed by the Appellant. However, "[o]bviousness may not be established using hindsight or in view of the teachings or suggestions of the invention." ***Para-Ordnance***, 73 F.3d at 1087, 37 USPQ2d at 1239, ***citing W.L. Gore & Assocs., Inc. v. Garlock Inc.***, 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), ***cert. denied,*** 469 U.S. 851 (1984). In addition, our reviewing court requires the Patent and Trademark Office to make specific findings on a suggestion

to combine prior art references. ***In re Dembiczak,*** 175 F.3d 994, 1000-01, 50 USPQ2d 1614, 1617-19 (Fed. Cir. 1999). "The combination of elements from non-analogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a ***prima facie*** case of obviousness." ***Oetiker***, 977 F.2d at 1445, 24 USPQ2d at 1446.

Based on the evidence and arguments presented, and the pertinent law in this matter, we find that the Examiner has failed to establish a ***prima facie*** case of unpatentability with respect to claims 1-8. Accordingly, we reverse the Examiner's rejections of claims 1-8 as unpatentable over Lewis and Beckman.

REVERSED

MICHAEL R. FLEMING Administrative Patent Judge	)	
KENNETH W. HAIRSTON Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES

ANITA PELLMAN GROSS)
MRF:lbg Administrative Patent Judge)

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